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10/611,961	07/03/2003	Shinji Yokono	Q76454	3574

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EXAMINER

LIN, JAMES

ART UNIT	PAPER NUMBER
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1762

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/611,961

Applicant(s)

YOKONO ET AL.

Examiner

Jimmy Lin

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 15 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

1. Upon further search and consideration, the Examiner has withdrawn the statement of allowable subject matter. A new rejection has been made for claim 3 to address the previously stated allowable subject matter. In addition, various other rejections have been made, as indicated below.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-2, 4-8, and 15-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation of “inspecting whether or not said phosphor material is properly applied to each of said cells prior to drying said phosphor material” is indefinite (claim 1) because one of ordinary skill in the art would not be able to ascertain the degree of “properly applied”. The recitation of “said cells will provide a proper shape after said drying process” (claim 2) is indefinite for similar reasons.

The recitation of “determining on the basis of said pattern whether or not said phosphor material...will provide a proper shape” (claim 2) is indefinite because it is unclear as to what “basis” is required. The term “basis” is vague and one of ordinary skill in the art would not be able to understand the metes and bounds of the term.

The recitation of “wherein said phosphor material includes a plurality of types that have different emission” is indefinite because it is unclear as to the metes and bounds of “a plurality of types”.

Claim 6 recites the limitation “the second order” on pg. 5. There is insufficient antecedent basis for this limitation in the claim.

The recitation of “but also by results of all inspections performed before its application” (claim 6) is indefinite. Does “all the inspections performed before its application” refer to only

Art Unit: 1762

the inspections performed on a single PDP substrate or does it include *all* inspections performed on every previous PDP substrate?

It is indefinite as to whether the term “said applied phosphor” (claims 15-16) refers to the phosphor before or after drying because there is no antecedent basis for such a term. For the purpose of examining, the term will be interpreted to be inclusive of either before or after drying.

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 2 and 6 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for radiating light onto the phosphor material so as not to make the phosphor material excited and emit light, does not reasonably provide enablement for radiating light onto the phosphor material to cause the phosphor material to become excited and emit light while the radiated light is reflected and the reflected light is observed. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

There is no support for determining whether or not the phosphor material will provide a *proper shape* after the drying process in claim 2. The specification never mentions anything about any sort of shape of the phosphor material, or any sort of shape in general.

There is no support for “wherein said phosphor material includes a plurality of types that have different emission colors to each other” (claim 6). The specification does seem to provide support for “a PDP has three types of phosphor layer emitting light of the primary colors, i.e., Red (R), Green (G), Blue (B)” (pg. 20, line 27-pg. 21, line 1). For the purpose of this examination, the limitation will be interpreted to at least include the cited lines from the specification.

There is no support for “said types of phosphor material are separately applied to the cells in a predetermined order” (claim 6) because the specification never mentions anything about a predetermined order. The specification does provide support for phosphor layers being formed

Art Unit: 1762

in the order of red, green, and blue (pg. 41, lines 10-15). For the purpose of this examination, the limitation will be interpreted to be inclusive of any order.

There is no support for "but also by results of all inspections performed before its application" (claim 6) because the specification does not teach that the results include *all* inspections performed on every previous PDP substrate.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fitzpatrick (U.S. Patent 4,755,752) in view of Iguchi et al. (WO 9827570; references made are to the English equivalent U.S. Publication 2002/009536).

Fitzpatrick teaches a method of inspecting a substrate comprising of an electroluminescent panel. A light source 30 radiates light 32 onto the substrate and a viewer 43 is used to capture the reflected light and to detect flaws (abstract; col. 3, line 56 – col. 4, line 14; col. 5, lines 44-47; Figs. 2a,6a-6b)

Fitzpatrick does not explicitly teach forming barrier ribs on a surface of an insulating substrate and applying a phosphor material in the form of a paste to the substrate. However,

Iguchi teaches a method of making plasma display panel (PDP) (i.e., a type of electroluminescent panel), wherein phosphor paste is applied between barrier ribs on a substrate (abstract; Fig. 1). The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed barrier ribs and to have applied a phosphor material between the ribs on the substrate of Fitzpatrick in order to form an electroluminescent panel with a reasonable expectation of success because Iguchi teaches that such methods are suitable for making an electroluminescent panel.

Fitzpatrick does not explicitly teach radiating the light onto the surface of the phosphor material prior to drying the phosphor material. However, the selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See, for instance, *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have radiated the light onto the phosphor material prior to drying instead of radiating the light onto the phosphor material after drying with the expectation of similar results and with a reasonable expectation of success because the detection of flaws is possible before or after drying the phosphor material.

Claim 7: Fitzpatrick and Iguchi are silent as to whether the visible light radiated onto the phosphor material causes the phosphor material to become excited and emit light. However, the Applicant teaches that at least certain wavelengths of visible light do not excite the phosphor material (pg. 22, lines 2-7). Thus, the visible light of Fitzpatrick must necessarily have some wavelengths that do not excite the phosphor.

Claim 8: Iguchi teaches that the phosphor paste can be applied by a printing technique (Figs. 1,5-8).

9. Claims 1 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iguchi et al. '570 in view of KR 1999-85889 (hereafter '889) and Fitzpatrick '752.

Iguchi discloses a method of making a PDP, wherein phosphor paste is printed between barrier ribs, as discussed above.

Iguchi does not explicitly teach an inspection method. However, '889 teaches a method of inspecting a PDP, wherein an inspection steps takes place after the printing of each phosphor R, G, and B. If the printed condition of the phosphor is determined to be poor, the phosphor material is removed. The substrate (i.e., a subsequent substrate) is returned to the beginning of the process to reprint the phosphor materials (abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have inspected the phosphors of Iguchi using the inspection method of '889. One would have been motivated to do so in order to increase the production yield and reduce the manufacturing cost of PDPs (abstract).

'889 teaches that some sort of inspection is required to determine the condition of the printed phosphor, but does not explicitly teach that inspection method comprises radiating light onto the surface of the phosphor and observing the reflected pattern of light reflected. However, Fitzpatrick teaches that such a method for inspecting an electroluminescent panel is obvious, as discussed above. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have inspected the phosphors of '889 using the method of Fitzpatrick with a reasonable expectation of success because Fitzpatrick teaches that such inspection methods are suitable for detecting flaws in electroluminescent displays.

Iguchi, '889, and Fitzpatrick do not explicitly teach that the phosphor is inspected before drying. However, the selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See, for instance, *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). Changing the order of steps is obvious, as discussed above.

Claim 5: The inspection must necessarily have some sort of basis of comparison (i.e., a previously inspected PDP substrate).

Claim 6: Iguchi teaches that one phosphor color can be applied at a time [0263]. '889 teaches that an inspection step takes place after the respective applications of each of the phosphor materials R, G, and B (abstract).

Claims 7-8 are rejected for substantially the same reasons as discussed above.

Art Unit: 1762

10. Claims 1-2, 4-8, and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iguchi et al. '570 in view of KR 1999-85889 and Nishiyama et al. (U.S. Patent 6,797,975).

Iguchi discloses a method of making a PDP, wherein phosphor paste is printed between barrier ribs, as discussed above.

Iguchi does not explicitly teach an inspection method. However, '889 teaches that inspecting printed phosphors in the art of PDPs is obvious, as discussed above.

'889 teaches that some sort of inspection is required to determine the condition of the printed phosphor, but does not explicitly teach that inspection method comprises radiating light onto the surface of the phosphor and observing the reflected pattern of light reflected. However, Nishiyama teaches that a PDP can be inspected for pattern defects using white light (i.e., radiating the white light onto the surface and observing the reflected light) (col. 5, lines 7-50). The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have inspected the phosphor of Iguchi and '889 using the method of Nishiyama with a reasonable expectation of success because Nishiyama teaches that such an inspection method is suitable for detecting pattern defects.

Iguchi, '889, and Nishiyama do not explicitly teach that the phosphor is inspected before drying. However, the selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See, for instance, *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). Changing the order of steps is obvious, as discussed above.

Claim 2: Nishiyama teaches that an image of the reflected light can be captured (col. 6, lines 18-24).

'889 teaches that each of the printed phosphor material of the same color is inspected before continuing to the next process step. Iguchi teaches that the phosphor material of the same color can be printed into multiple cells simultaneously, thereby requiring the inspection of every cell. Therefore, the images of each cell must necessarily be distinguished from one another in order to determine the printed condition of each phosphor material in each cell.

Because this inspection of pattern defects is performed prior to drying the phosphor material, the inspection will necessarily determine whether or not a phosphor layer formed by

drying the phosphor material will normally be formed. Any pattern defects in the phosphor material prior to drying will carry over into the dried state.

Claim 4: Nishiyama teaches that the inspection method can detect pattern defects, as discussed above.

Claims 5-8 are rejected for substantially the same reasons as discussed above.

11. Claims 3-4 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iguchi et al. '570 in view of KR 1999-85889 and Nishiyama '975 as applied to claim 2 above, and further in view of Isberg et al. (U.S. Patent 5,998,085) and Hayashi et al. (U.S. Publication 2002/0063527).

Iguchi, '889, and Nishiyama are discussed above. Nishiyama teaches that pattern defects can be detected, but does not explicitly teach that the defect can be a pinhole. However, Isberg teaches that pinholes in a phosphor layer is a known pattern defect for PDPs (col. 1, lines 50-54; col. 2, lines 13-16). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have inspected for pinholes in the PDP phosphor layer of Iguchi with a reasonable expectation of success because Nishiyama teaches the inspection of pattern defects and Isberg teaches that pinholes are well-known pattern defects.

Nishiyama does not explicitly teach the step detecting whether or not phosphor material flows into a cell to which said phosphor material is not yet applied so far. However, Iguchi does teach that the phosphor layers are separated by barrier ribs (Fig. 1). Hayashi teaches that it is well known in the art of PDPs that barrier ribs are used to prevent the different colored phosphors from mixing with each other [0010]. The mixing of colored phosphors will lower the contrast and resolution of the display, thereby causing a pattern defect because the pattern is not intended to have phosphors flow into adjacent cells. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have inspected for phosphors flowing into the adjacent cells of Iguchi with a reasonable expectation of success because Nishiyama teaches the inspection of pattern defects and because Hayashi teaches that the mixing of colored phosphors is a known pattern defect.

Iguchi, '889, and Nishiyama do not explicitly teach that the step of detecting whether or not an amount of the phosphor material applied to each of said plurality of cells is suitable,

excessive, or small. However, Iguchi does recognize the need for forming a uniformly thick phosphor layer in order to achieve higher uniformity in luminance and display. A phosphor layer not uniformly thick is essentially a phosphor layer that has portions that is either excessive or small. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have inspected for uniformity of the phosphor layer of Iguchi. One would have been motivated to do so in order to have produced a higher quality finished product.

Claim 4: A pinhole can be interpreted to be a micro-defect. Phosphors flowing into an adjacent cell can be considered a macro-defect.

12. Claims 1, 5, and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iguchi et al. '570.

Iguchi discloses a method of making a PDP as discussed above, but does not explicitly teach the step of inspecting whether or not a phosphor material is properly applied to each of said cells prior to drying said phosphor material by radiating light onto a surface of the phosphor material and observing a pattern of light reflected from each of said plurality of cells. However, an operator or engineer walking through the manufacturing process can take a look at the phosphor layer that has been applied to PDP substrate prior to drying. Such a walk-through is typical in the manufacturing plants to ensure that the product line is operating properly. In addition, a sample could be taken off the product line after the application of the phosphor and prior to drying in order to observe the quality of the deposition apparatus. In either case, some sort of light must be provided so that the PDP substrate can be observed, and this light will necessarily reflect off the phosphor layer. The observer can then make a mental note that the applied phosphor amount is suitable.

Claim 5: The observer must have some sort of comparison when determining that the phosphor amount applied is suitable. The comparison would be made relative to previously seen PDP substrates.

Response to Arguments

13. Applicant's arguments filed 12/11/2006 have been fully considered but they are not persuasive.

In response to the Applicant's arguments regarding *In re Burhans*, *per se* rules, and the citation of *In re Ochiai*, the Applicant is directed to MPEP 2144.04.IV.C. in Rev. 5, **Aug. 2006**. This section of the MPEP notes the applicability of *In re Burhans*. The Applicant should note that Rev. 5 is dated August of 2006, which is after the decision of *In re Ochiai* in 1995. Thus, the MPEP does not prohibit the use of *In re Burhans*, as the Applicant is arguing.

The Applicant argues that the reordering of steps would have been non-obvious because the Applicant discovered that a condition of the phosphor material before the drying process is closely related to the quality of the phosphor material after the drying process. The Applicant further argues that as a result of this finding that an illustrative embodiment of the claimed method can determine whether or not phosphor material is acceptable or not in an earlier stage of the manufacturing process than the conventional method. However, defects such as pinholes, insufficient amounts of phosphor to cause non-uniformity, and phosphors flowing into adjacent cells are well-known defects in the art as discussed above. Even if these defects were detected before the drying step, one of ordinary skill in the art would clearly recognize that these defects will not disappear due to a drying step alone, but will in fact carry over into the dried phosphor. Therefore, the current claims do not offer any unexpected results.

The Applicant argues that claims 2-8 are patentable for at least including the step of inspecting whether or not the phosphor is properly applied to the cells prior to drying the phosphor material. However, the term "properly applied" is indefinite for the reasons discussed above. In addition, such limitations are obvious over the prior art as discussed above.

The Applicant argues that claims 15-16 are patentable since the claims contain allowable subject matter as indicated in the previous Office Action (filed 9/11/2006). However, upon further search and consideration, the statement of allowable subject has been withdrawn and a new rejection has been established to address such limitations.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

Art Unit: 1762

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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KEITH HENDRICKS
PRIMARY EXAMINER